Chapter 6

# Cumulative Effects

## 6.1 Introduction

This chapter addresses the cumulative effects of covered activities and the LCR MSCP Conservation Plan on covered and evaluation species. Cumulative effects are defined under ESA regulations as those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 C.F.R. §402.02). This definition applies only to section 7 analyses and differs from the broader definition used under NEPA and other environmental laws. In this chapter, foreseeable non-Federal projects expected to occur in the LCR MSCP planning area are identified, and their probable effects on covered species evaluated.

## 6.2 Foreseeable Non-Federal Projects in the LCR MSCP Planning Area

Various non-Federal activities occur in the LCR MSCP planning area. Non-Federal activities affecting the LCR mainstem river and reservoirs include:

- diversion of state entitlement waters;
- potential decrease in water quality by municipal effluent discharge, storm runoff, agricultural drainage, recreational waste, and other nonpoint sources; and
- increased recreational use including fishing, hunting, boating, and swimming.

Non-Federal activities affecting the LCR floodplain include:

- agricultural development, including land conversion, pesticide application, soil erosion/minimum tillage, cropping patterns that benefit certain covered species, and land fallowing;
- municipal and industrial development, including land conversion, air pollution (dust, automotive, and industrial emissions), and natural area management;
- trash accumulation, including solid waste disposal (landfills);

- increased wildfire frequency resulting in reduced native riparian habitat and expansion of saltcedar; and
- increased recreational uses, such as hunting, camping, hiking, and off-road vehicle use.

It is anticipated that these contemporaneous non-Federal actions will continue in the future. Table 6-1 lists potential non-Federal projects in the LCR MSCP planning area that have been identified by contacts with local and state agencies.

The potential effects of non-Federal flow-related activities are assessed in the impact analysis in this BA in combination with Federal flow-related activities. Flow-related effects on each covered species are provided in Section 5.5, "Effects on Covered Species." A detailed accounting of LCR water diversions, returns, and consumptive use is provided in the Appendix Q, "Compilation of Records in Accordance with Article V of the Decree of the Supreme Court of the United States in *Arizona v. California* dated March 9, 1964." The same non-Federal and Federal flow-related impacts are addressed in the LCR MSCP HCP.

## 6.3 Cumulative Impacts on Covered Species

Non-Federal activities in the LCR MSCP planning area that may result in cumulative impacts on covered and evaluation species are divided into five categories:

- human population growth and economic development,
- visitation and recreation,
- environmental contaminants, and
- wildfires.

Human population growth and economic development can lead to the loss of covered species' habitat, disturbance of covered species, and increased predation and parasitism on covered species. Visitation and recreation can lead to disturbance of covered species, and increased contamination of the river from motorized recreation. Environmental contaminants may adversely affect reproduction in covered fish species and cause birth defects in some covered bird species. Wildfires can disturb covered species and remove habitat on which they depend. Each of these five categories of activities is discussed in more detail in the following sections.

### 6.3.1 Effects of Human Population Growth and Economic Development

Growth is projected in urban areas along the LCR, which will increase all cumulative impacts. Growth will lead to increased development, visitation, recreation, and contamination and could lead to increased fire frequency.

**Table 6-1.** List of Known Non-Federal Projects in the LCR MSCP Planning Area with Potential to Affect Covered Species



| Reporting Agency | Project | Location |
|---|---|---|
| La Paz County | *Emerald River and Associated Townhome Development*—A 275-acre development project, including 600 residential units, a small hotel, and a marina, and a 7-acre 43-unit townhome development project. | Ehrinburg, Arizona |
| Imperial County | *Riverfront Specific Plan #01-0001 and Tract Maps #946 and #947*—34 residential lots and 9 open space lots on an 80-acre parcel developed through a specific plan, general plan amendment and zone changes, and two tract maps. | Imperial County, California |
| City of Blythe | *Blythe Mobile Home Park Solar Power Conversion*—Conversion of buildings within the park to solar power. | Blythe, California |
| Riverside County | *Mayflower Park Improvements and Expansion*—12 individual projects, including planning and development of the park expansion site, infrastructure improvements, lagoon improvements, and construction of new recreational buildings and restrooms on an approximately 85-acre site. | Unincorporated area approximately 4 miles north of Blythe, California |
| City of Blythe | *Queshan Park Improvements*—Planning, design, and construction of improvements, including boat launch, recreational vehicle parking, new campsites, limited boat slips, restaurant, and lagoon improvements. | Blythe, California |
| Caltrans (District 8 – San Bernardino County) | *Needles Highway Improvements Project*—Improve the highway pavement and add passing lanes. The project would include environmental clearance, surveying, horizontal and vertical alignment changes, pavement widening, passing lanes, left turn pockets, shoulder widening, and pavement rehabilitation. Total study area is approximately 730 acres. | Needles Highway from Needles, California to Laughlin, Nevada. |
| City of San Luis | *City of San Luis Wastewater Treatment Plant Facility*—Expanding the sequential batch reactor system of the plant by adding two new parallel reactors, two aerobic sludge digesters, and all the associated piping and equipment. | San Luis, Arizona |
| City of Yuma | *Gateway Park*—A planned 20-acre park that includes recreational and historical interpretive park improvements using native vegetation. The park will use only native vegetation and should provide ancillary habitat for species either listed or nonlisted. | Yuma, Arizona |
| City of Somerton | *Somerton, Arizona Replacement of Wastewater System Project*—Reconstruct the Somerton Wastewater Treatment Plant. The project site is approximately 15 acres. | Somerton, Arizona |
| Bullhead City | *Bullhead City*—There are approximately 90–100 planned and proposed residential, commercial, and other development projects in this area pending environmental documentation. | Bullhead City, Arizona |
| Quechan Indian Nation, City of Yuma, and Yuma Crossing National Heritage Area | *Yuma East Wetlands Restoration Project*—A 1,400-acre native riparian and river restoration project centered on the restoration of habitat through the reopening of historical channels and slough, clearing of nonnative species, and revegetation of the area with native plants and trees. | Yuma, Arizona |

| Reporting Agency | Project | Location |
|---|---|---|
| Quechan Indian Nation, City of Yuma, and Yuma Crossing National Heritage Area | *Yuma West Wetlands*—A 110-acre former landfill to be revegetated and converted to a recreational park, and an additional 35 acres of habitat restoration through the removal of exotic plant species and revegetation with native plants and trees. | Yuma, Arizona |
| Clark County | *Clark County Multiple Species Habitat Conservation Plan*—An approved multiple species habitat conservation plan being implemented to address the conservation needs of the entire range of biological resources in Clark County. | Clark County, Nevada |
| The Metropolitan Water District of Southern California, Palo Verde Irrigation District | *Land Management, Crop Rotation, and Water Supply Program in the Palo Verde Irrigation District*—A land management, crop rotation, and water supply program to develop a flexible and reliable water supply for The Metropolitan Water District of Southern California and to assist in stabilizing the farm economy in the Palo Verde Valley. | Palo Verde Valley, California |
| Nevada Division of State Lands | *Floating Dock*—proposed. | Regency Casino, Laughlin, NV |
| City of Blythe | *Riverview Estates subdivision*—79 single-family residential lots. | City of Blythe, California |
| City of Blythe | *Palo Verde Oasis*—Phase III: approximately 29 single family residential lots. | City of Blythe, California |
| Cocopah Tribe | *River Restoration Project*—12-mile stretch of the river. | Northern Cocopah Reservation |
| Fort Mojave Indian Reservation | *South Point/Calpine Cogeneration Plant* | Fort Mojave Indian Reservation |
| Imperial County | *Palo Verde River Properties*—18-parcel subdivision, 12 parcels abut the lower Colorado River. | Imperial County, California |

Note: Some of these apparently non-Federal projects may require Federal funding or authorization (e.g., a Clean Water Act section 404 Permit may be required) and hence be Federal actions. In such cases, the project would not be considered to result in cumulative effects.

Economic development in the LCR MSCP planning area could include the construction of residential areas and supporting infrastructure; commercial developments; recreational developments, such as marinas, docks, and boat ramps; and casinos and associated infrastructure. In addition, economic development could include an increase in agricultural land use and production; however, development will likely result in the conversion of agricultural land to urban uses. Economic development effects on covered species may include increased public use of the species' habitat, removal of the species' habitat, disturbance or mortality of individuals (e.g., incidental harvest of covered fish species by anglers), reduction in the area available to potentially create habitat because of development, increased predation/competition by domestic animals and introduced nonnative fish, and increased parasitism by the brown-headed cow bird as a result of habitat fragmentation. Effects with the potential to affect all covered species are increased public use of the species' habitat, removal of the species' habitat, disturbance or mortality of individuals, and reduction in the area available to potentially create habitat. Increased predation by domestic animals (e.g., cats) and increased parasitism by the brown-headed cowbird have the potential to affect covered bird species. Increased predation by introduced nonnative fish has the potential to affect all covered fish species.

#### 6.3.1.1 Contribution of Covered Activities and LCR MSCP to Cumulative Effects

Covered activities and LCR MSCP Conservation Plan impacts related to population growth and economic development include maintenance of roads, canals, and drains; other miscellaneous maintenance; and construction of boat ramps, sport-fishing docks, and roads. The relative contributions of the covered activities and LCR MSCP conservation measures to impacts having to do with population growth and economic development are not expected to contribute to cumulative impacts in the LCR MSCP planning area.

### 6.3.2 Effects of Future Visitation and Recreation

Visitation and recreation along the LCR have steadily increased in the past; this trend likely will continue. Future increases in use of motorized vehicles on the river may result in increased spills of petroleum products and other contaminants, as well as in discharge of both treated and untreated sewage effluent (U.S. Fish and Wildlife Service 1993), adversely affecting water quality. Decreases in water quality could affect covered fish species and covered bird and mammal species that use marsh and backwater land cover types (i.e., California leaf-nosed bat, pale Townsend's big-eared bat, western red bat, western yellow bat, Colorado River cotton rat, western least bittern, California black rail, and Yuma clapper rail).

As visitation and recreational use increase, more disturbances of covered species will result. A number of tribes and private groups are proposing to build large casinos and recreation facilities on the river. These projects could increase the number of people fishing, swimming, skiing, hunting, and boating on the river, as well as using off-road vehicles near the river. Such activities would result in impacts on many of the habitat areas used by covered species, including riparian, marsh, and desert scrub land cover

types. Increased visitation and recreation also could cause increased disturbance of covered fish and their spawning areas, and unintentional harvest of covered fish species by anglers.

#### 6.3.2.1 Contribution of Covered Activities and LCR MSCP to Cumulative Effects

Covered activities and LCR MSCP Conservation Plan impacts related to visitation and recreation include construction and maintenance of boat ramps, fishing docks, and roads, which could contribute to the increase in human use and disturbance of covered species' habitats. However, the relative contributions of the covered activities and LCR MSCP Conservation Plan to impacts on covered species having to do with visitation and recreation are not expected to contribute to cumulative impacts within the LCR MSCP planning area.

### 6.3.3 Effects of Environmental Contaminants

Elevated levels of organochlorides, selenium, arsenic, cadmium, copper, lead, and zinc in covered species' habitats can have effects on covered species. Sources of contaminants include municipal effluent discharge, stormwater runoff, agricultural drainage, recreational waste, and other nonpoint discharges. Irrigation water returns to the LCR contain higher levels of organics from fertilizers and pesticide and herbicide residuals than the water contains when it is diverted. Air pollution may also affect covered species. Pesticides can drift from croplands, potentially affecting both terrestrial and aquatic covered species.

High levels of contaminants may have an effect on razorback sucker and other covered fish species. Organochlorines and industrial contaminants are known to have adversely affected the reproductive organs of male carp in razorback sucker spawning areas in parts of Lake Mead (Bevans et al. 1996). Reproduction, and thereby long-term viability, of the razorback sucker may be adversely affected in these areas, but further research is needed to assess actual effects, if any. High selenium concentrations in fish located in backwater lakes on Cibola, Havasu, and Imperial NWRs may continue to pose a risk to razorback suckers; elevated levels of arsenic, cadmium, copper, lead, and zinc were also found in some fish (King et al. 1993).

Elevated levels of selenium may also have an effect on covered bird species. A southwestern willow flycatcher fledgling in southwestern Colorado was found with a crossed bill, a classic symptom of selenium poisoning in birds. The flycatcher was reared in the Escalante State Wildlife Area, which drains agricultural lands and for which high levels of selenium have been detected in past monitoring (Sogge pers. comm. in U.S. Fish and Wildlife Service 1997). Selenium and other contaminants have been found in elevated levels in Yuma clapper rails and other birds within the LCR (Estrada and Maughan 1999; King and Andrews 1996). Continuing exposure to selenium and other contaminants may threaten covered bird species.

#### 6.3.3.1 Contribution of Covered Activities and LCR MSCP to Cumulative Effects

Drainage of irrigation water associated with creation of LCR MSCP habitats on natural lands could increase the contribution of contaminants into the LCR. The LCR MSCP, however, will reduce contaminants entering the LCR in drainage from agricultural lands that will be converted to covered species habitat. It is anticipated that LCR MSCP–created habitats will require minimal application of pesticides and will not require application of fertilizers. Consequently, the load of agricultural contaminants discharged to the LCR would be reduced with implementation of the LCR MSCP Conservation Plan. Operation of equipment to implement covered activities and LCR MSCP conservation measures (e.g., for establishing and maintaining created habitat, constructing and maintaining access roads and other facilities) could result in accidental and localized spills of petroleum products. The relative contributions of the covered activities and LCR MSCP conservation measures to impacts having to do with environmental contaminants are not expected to contribute to cumulative impacts within the LCR MSCP planning area.

### 6.3.4 Effects of Wildfires

As human activity in riparian zones along the LCR increases, fire frequency is also likely to increase (Busch 1995). As fire frequency increases, and as saltcedar and arrowweed continue to dominate postfire recovery, more disturbances of covered species that use riparian land cover types (i.e., California leaf-nosed bat, pale Townsend's big-eared bat, western red bat, western yellow bat, desert pocket mouse, Yuma hispid cotton rat, yellow-billed cuckoo, elf owl, gilded flicker, Gila woodpecker, southwestern willow flycatcher, vermilion flycatcher, Arizona Bell's vireo, Sonoran yellow warbler, and summer tanager) likely will occur.

#### 6.3.4.1 Contribution of Covered Activities and LCR MSCP to Cumulative Effects

The covered activities and LCR MSCP Conservation Plan impacts related to increased wildfire frequency may include construction of boat ramps, fishing docks, and roads, possibly increasing access and visitation to riparian areas. The relative contributions of the covered activities and LCR MSCP conservation measures to impacts having to do with wildfires are not expected to contribute to cumulative impacts within the LCR MSCP planning area. The LCR MSCP Conservation Plan includes provisions to provide funding in support of fire suppression programs undertaken by local, state, and Federal agencies and will contribute toward reducing the current level of risk for wildfires along the LCR.

## 6.4 Summary of the Effects of Covered Activities and the LCR MSCP in Addition to Cumulative Effects

Effects of implementing the covered activities and LCR MSCP Conservation Plan include reduction in flow; construction of boat ramps, sport-fishing docks, and roads; maintenance of roads, canals and drains; other miscellaneous maintenance; fish stocking; and habitat creation. Construction of boat ramps, sport-fishing docks, and roads can cause the loss of small amounts of riparian, marsh, and desert scrub land cover types and increased harassment of covered species because of increased human access and recreation. Maintenance of washes, levees, banklines, desilting basins, and roads, as well as other miscellaneous maintenance, can cause the loss of small amounts of riparian, marsh, and desert scrub land cover types and disturbance of covered species that use those land cover types. In addition, environmental contaminants can be introduced during construction and maintenance activities. Though covered species habitat may be removed as a result of covered activities, there is a net gain in natural habitat for covered species as a result of implementing the LCR MSCP Conservation Plan. The net effects of all covered activities and LCR MSCP conservation measures on covered species are either beneficial or none (no effects) and, therefore, implementation of the covered activities and the LCR MSCP Conservation Plan will not contribute to cumulative impacts.